Delaware Department of Transportation – 2016 Winter Workshop

Operations Data:

Changing the Way We Do Business

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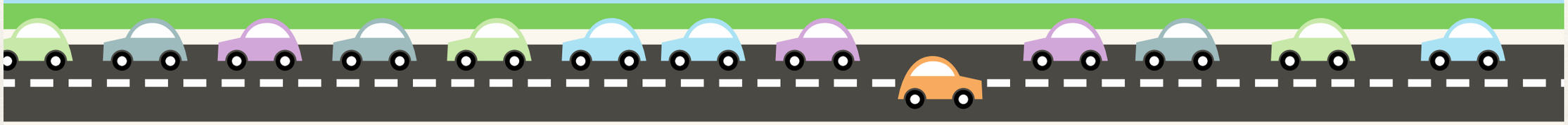
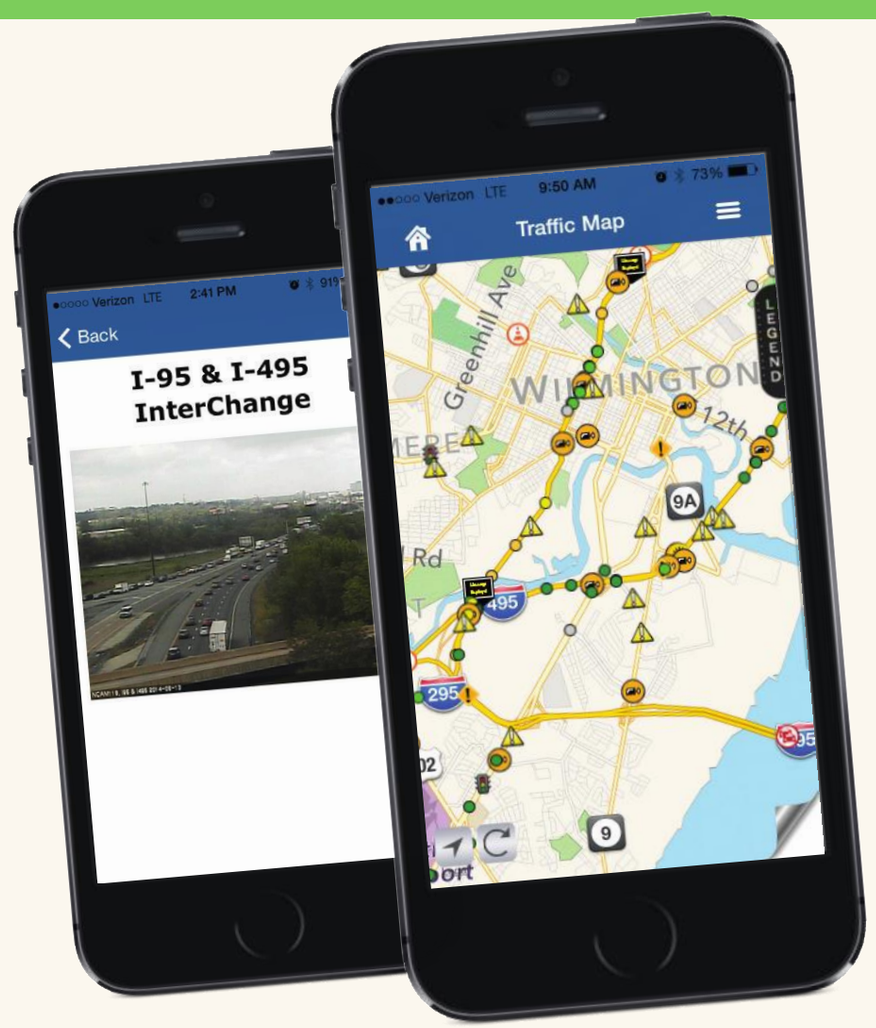
Agenda

- Monitoring capabilities
- Changing the way we do business
- Case studies

Driving in Delaware?

Access real-time traveler informatiog at your finer tips with the DelDOT App.





The DelDOT App provides up-to-the-minute, reliable traffic data that comes directly from DelDOT's Transportation Management Center (TMC).

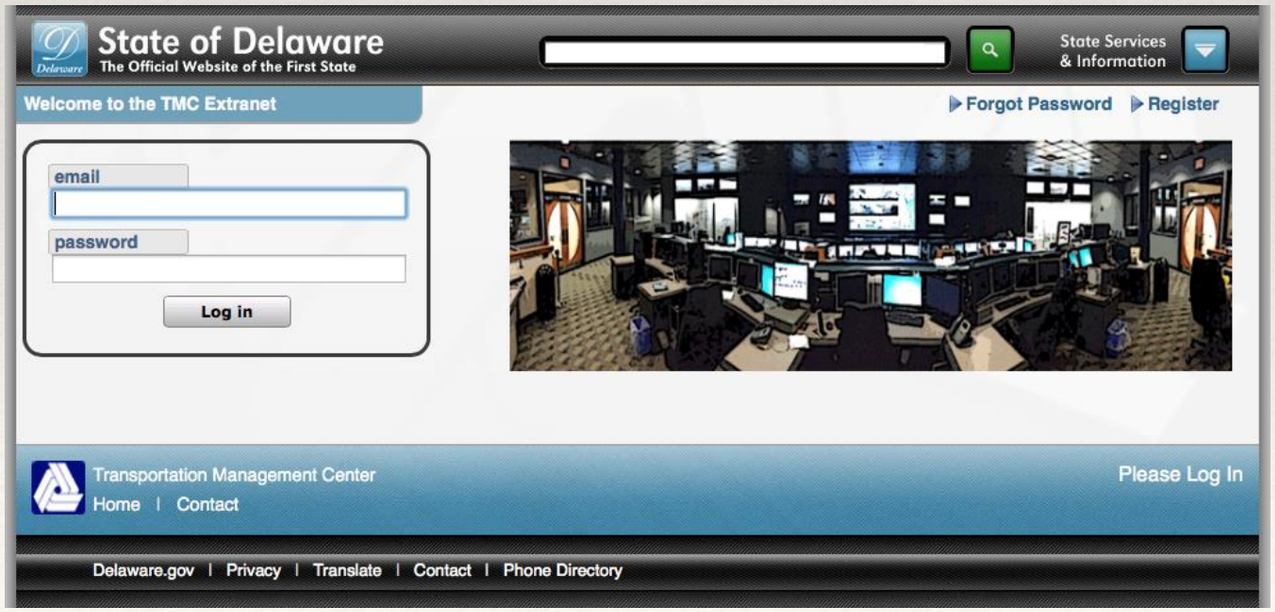
Use the **interactive traffic map** to view

- *Live video from 150 traffic cameras*
- *Travel times for the heaviest-traveled roadways*
- *Round-the-clock travel advisories (incidents)*
- *Delay-at-a-glance traffic*
- *Roadway weather*
- *Travel restrictions and closures*

The App also provides quick access to WTMC 1380 AM 24-hour broadcasts and social media connections.

The Data is in Your Hands!

- DelDOT App – *Real-Time*
  - Volumes, travel times, traffic cameras and more
- Extranet – *Historical*
  - Register: https://tmc.deldot.gov/tmcx/app/register?1
  - Download traffic counts and operations documents



Integration of Operations and Planning

- Making the most of transportation data.
- Involving the right cross-section of people.
- Developing good ideas.
- Making decisions.
- Taking action.

Monitoring
Real-time and Historical Data

Traffic

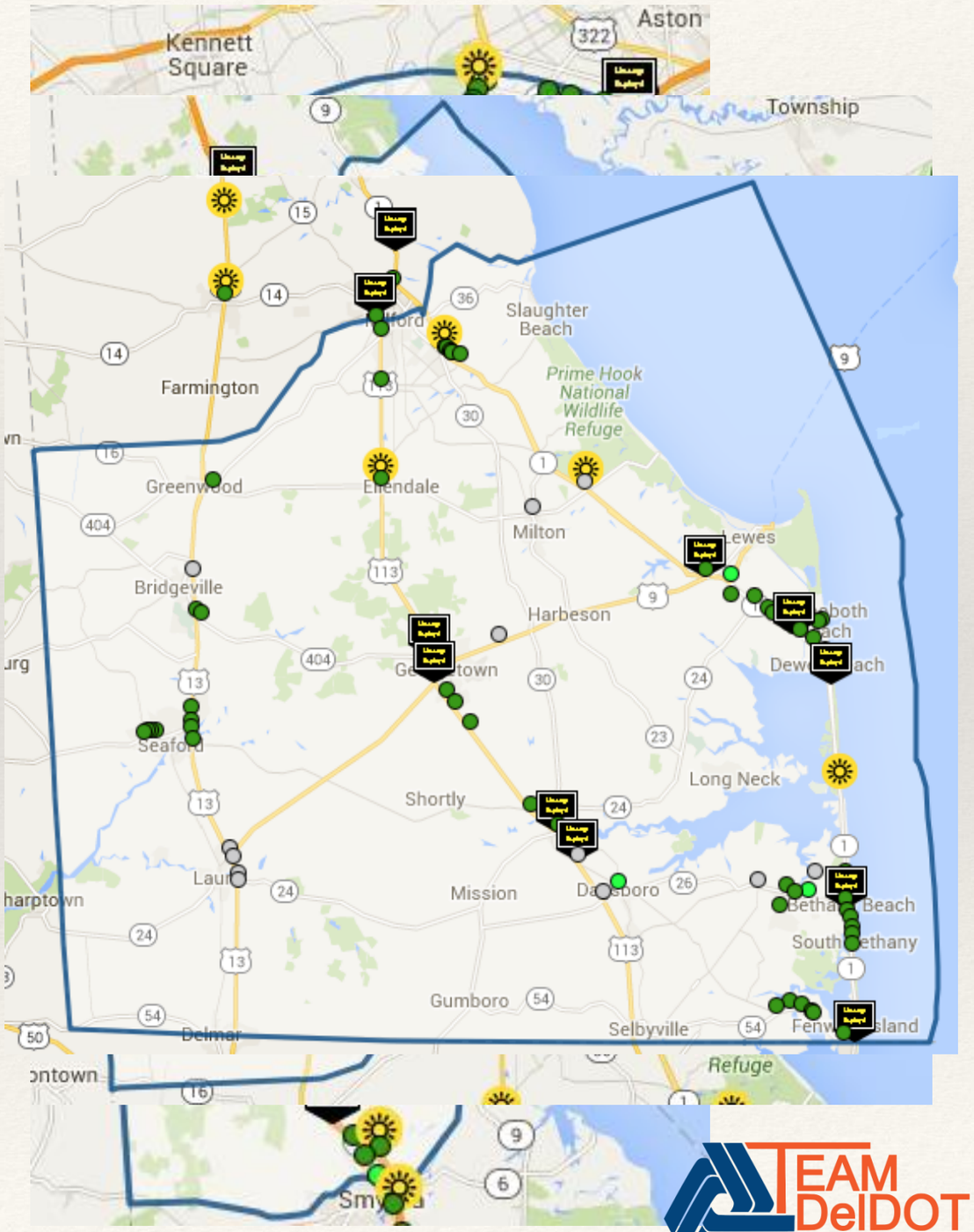
- Volume
- Roadway occupancy
- Speed
- Classification
- Travel Time
- Trip distribution
- Origin and destination

Weather

- Air Temperature
- Barometric Pressure
- Relative Humidity
- Precipitation Type & Volume
- Pavement Temperature
- Subsurface Temperature
- Pavement Surface (Dry, Wet, Ice)

Over 1,000 Monitoring Devices

- Live video from 150 **cameras**
- Speeds and volumes from over 150 **Wavetronix** radar detectors
- Volumes from over 1,000 traffic signal **system loops**
- Travel times from 130 **Bluetooth** readers
- 20 **weather** stations
- 80 **ATR** stations
- 60 **portable** devices for additional monitoring
- Valuable real-time info from people, too!

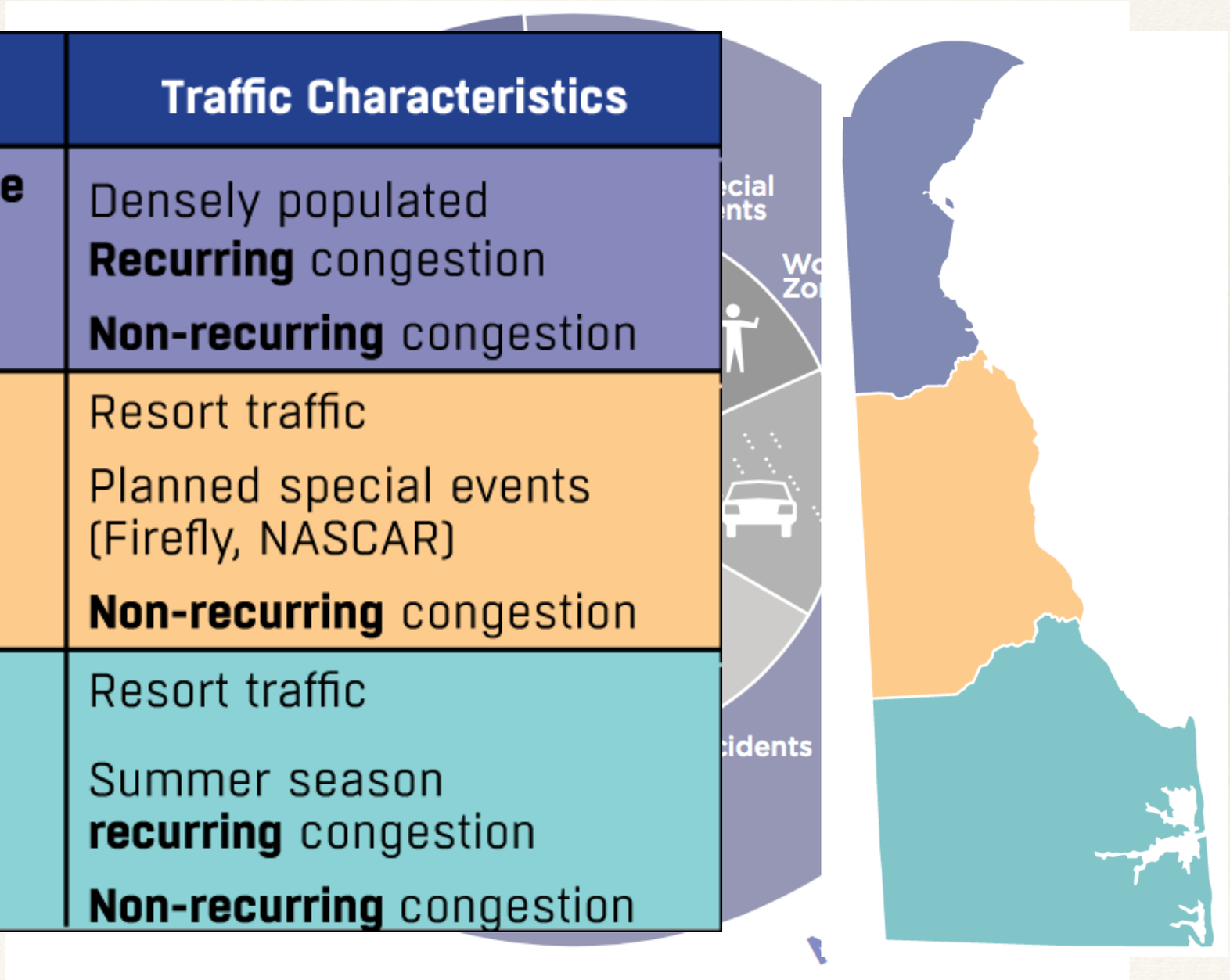


Monitoring the Traffic Heartbeat

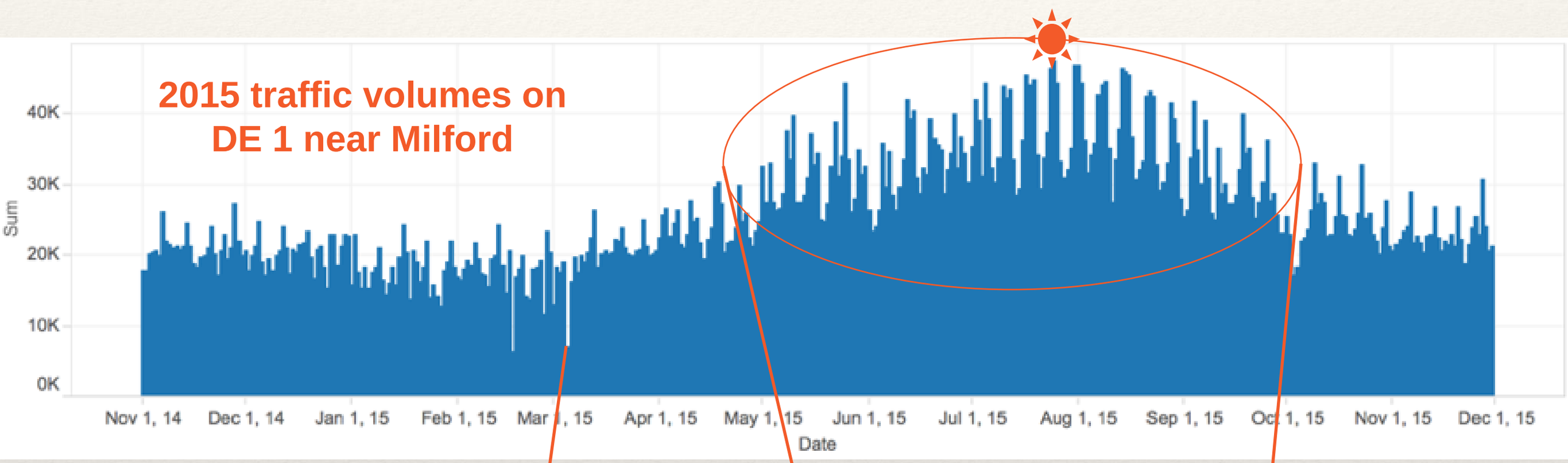
Heartbeat = normal traffic data trends [Change in Heartbeat]

Traffic Congestion Diversity

County	Traffic Characteristics
New Castle	Densely populated **Recurring** congestion **Non-recurring** congestion
Kent	Resort traffic Planned special events (Firefly, NASCAR) **Non-recurring** congestion
Sussex	Resort traffic Summer season **recurring** congestion **Non-recurring** congestion



Severity and Frequency



Lightest traffic during winter storms

Duration of resort peak

Heaviest traffic on Summer Saturdays

Winter traffic about ½ of summer traffic

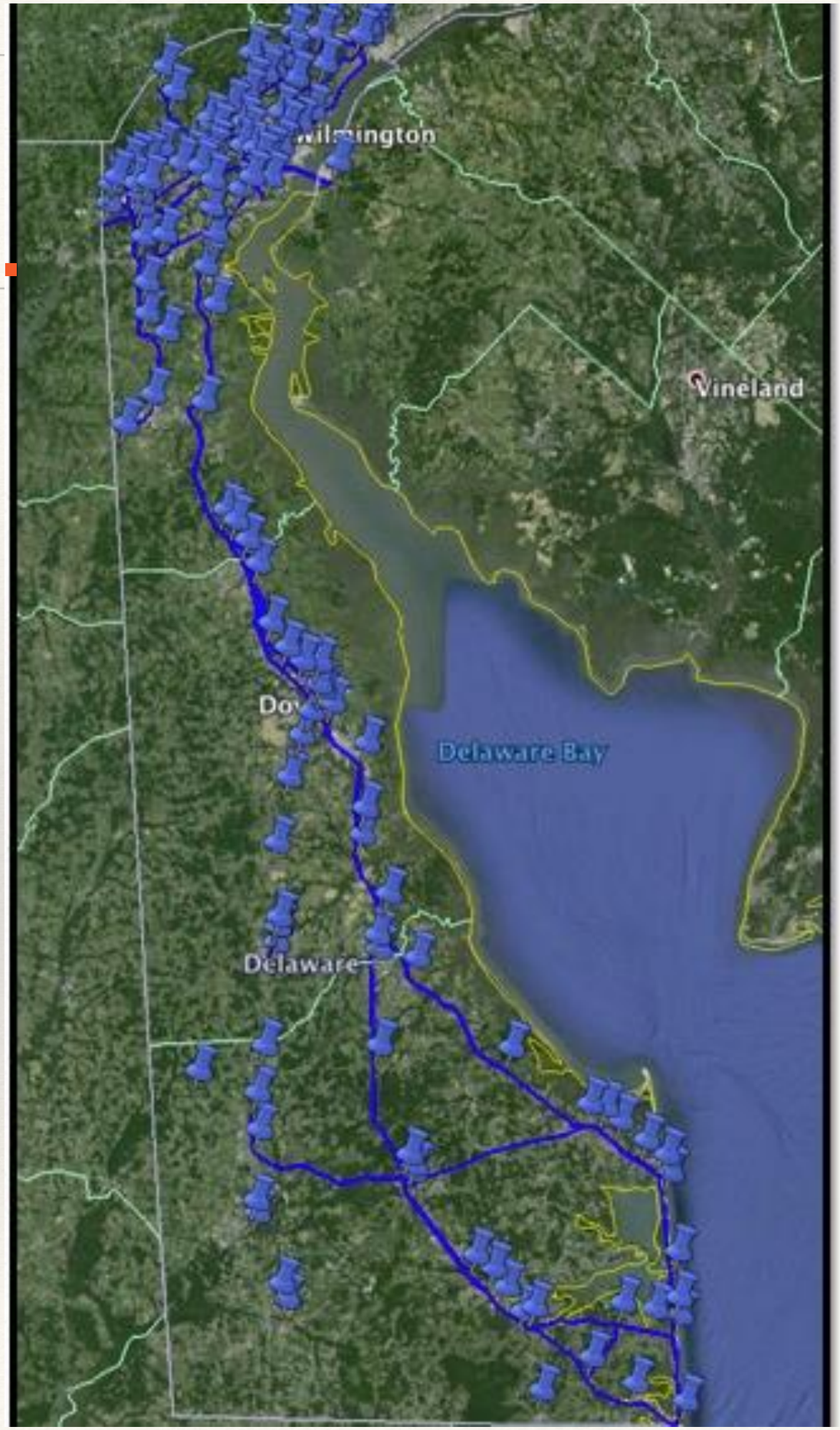
Now we can measure Reliability.

- Travel Time
- Statistics
- Sample size

“What is the normal travel time from Middletown to Wilmington during morning rush hour?”

“How much does it vary?”

“How much time should I plan, to play it safe?”



Changing the Way We Do Business

Past

- Spot counts (intersections, tubes, travel time runs)
- Volume counts
- Data collection duplication
- Model existing conditions
- Not enough data to measure reliability
- Severity of traffic congestion
- Touch on mobility in project prioritization

Present and Future

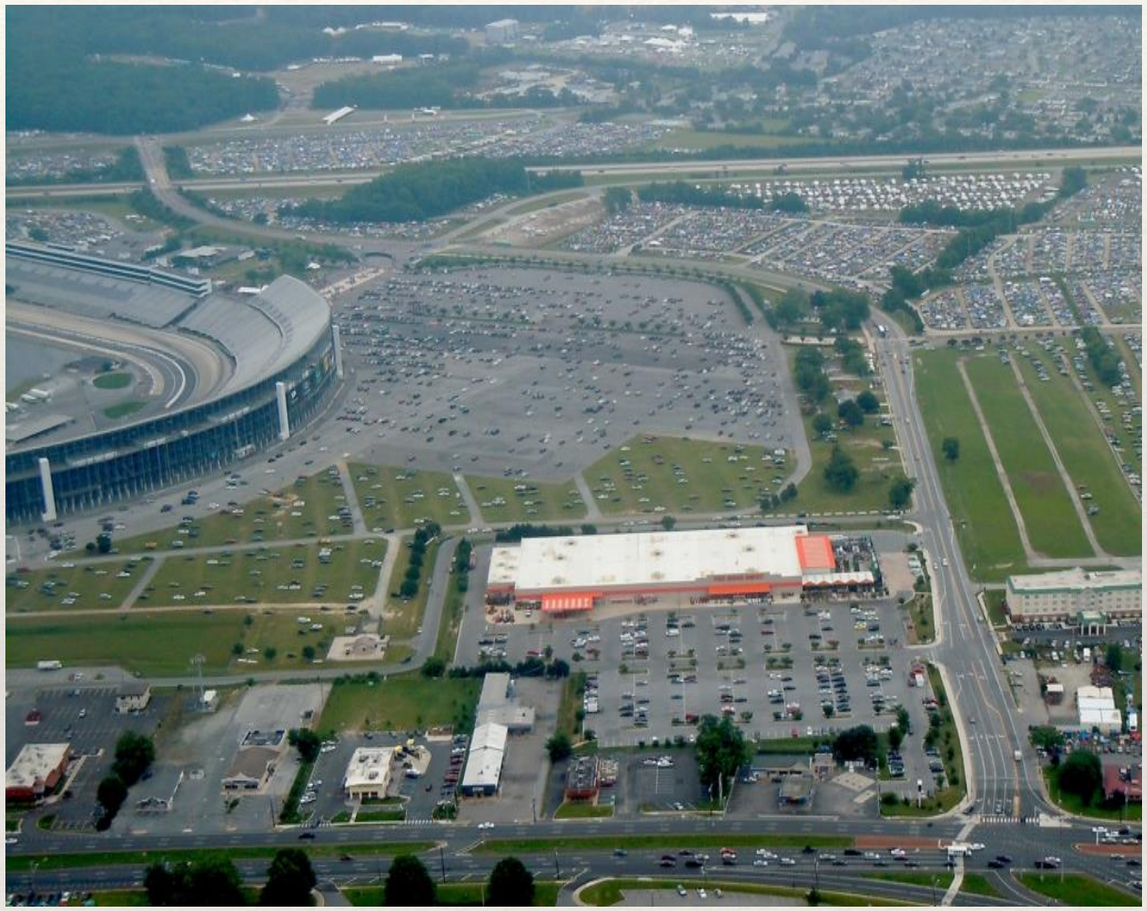
- Continuous data (24/7/365 data from permanent sensors)
- Volume, class, travel time, weather, incidents, transit
- Collaborative data collection and sharing
- Measure existing conditions
- Plenty of data to measure reliability
- Severity and frequency of traffic congestion
- Quantify mobility statewide in project prioritization

Case Studies: Customer Relations

- **Citizen Call:** DE 1 at Shuttle Drive Call
  - Can immediately check volumes, signal timings
- **Sharing Data**
  - Citizens
  - Economic development
  - Transportation professionals
  - Academia

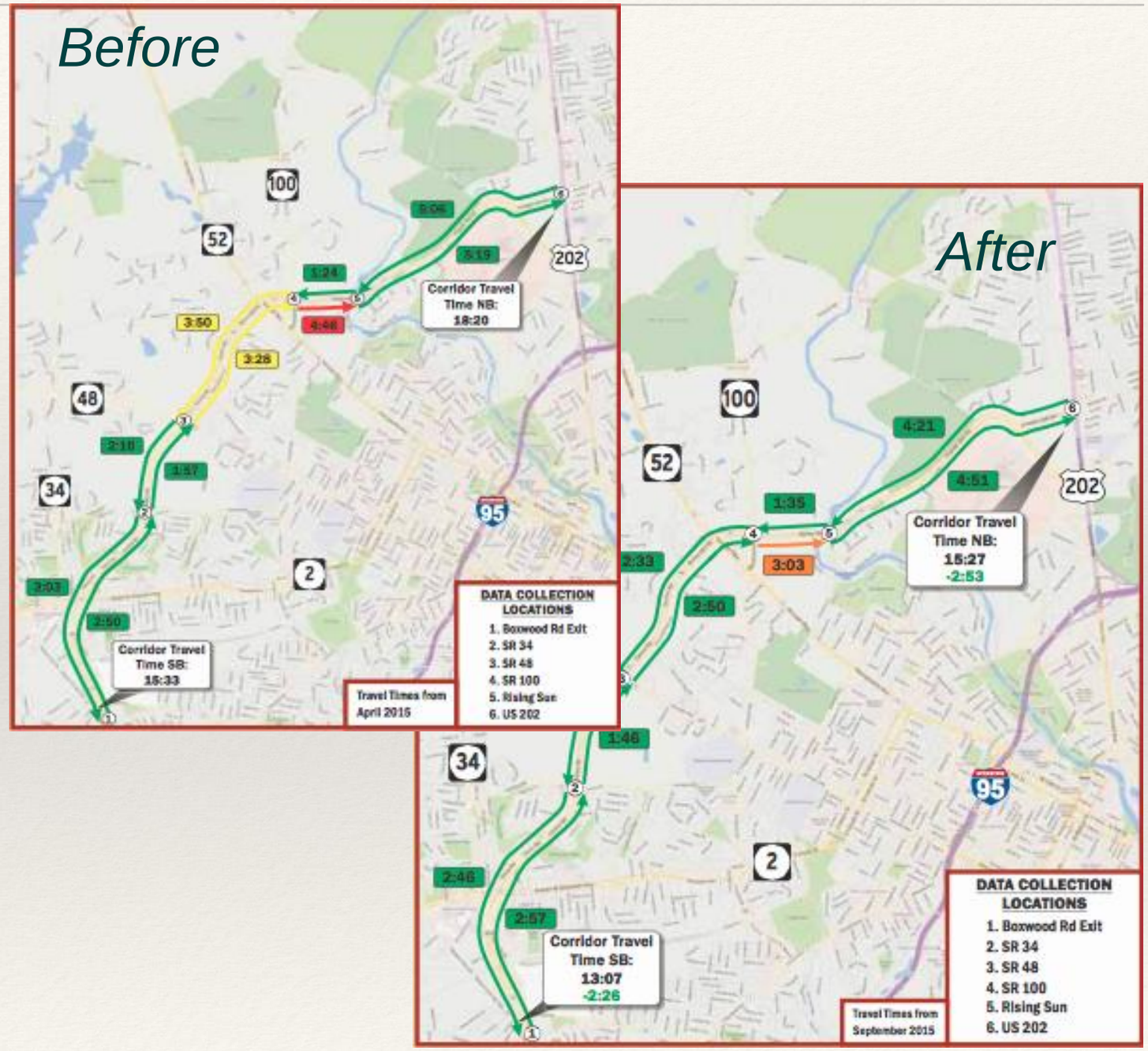
Case Studies: Operations

- **Special events require studies:** NASCAR, Firefly, Papal Visit
  - Measure “normal” volumes and travel times
  - Predict failure thresholds
  - Manage capacity
  - Provide info to the public



Case Studies: Transportation Solutions

- **Signal timing:** SR 141
  - Travel times
  - Volumes
  - Truck %s
  - Pulled data multiple times in one year



Case Studies: Transportation Solutions

- **Capacity Addition:** DE 1 Auxiliary Lane
  - Speeds
  - Volumes
  - Multiple locations
  - Dashboard

FIGURE 3 - SPEED DATA DASHBOARD FOR MAINLINE – AFTER CONDITIONS (December 1-3, 2015)

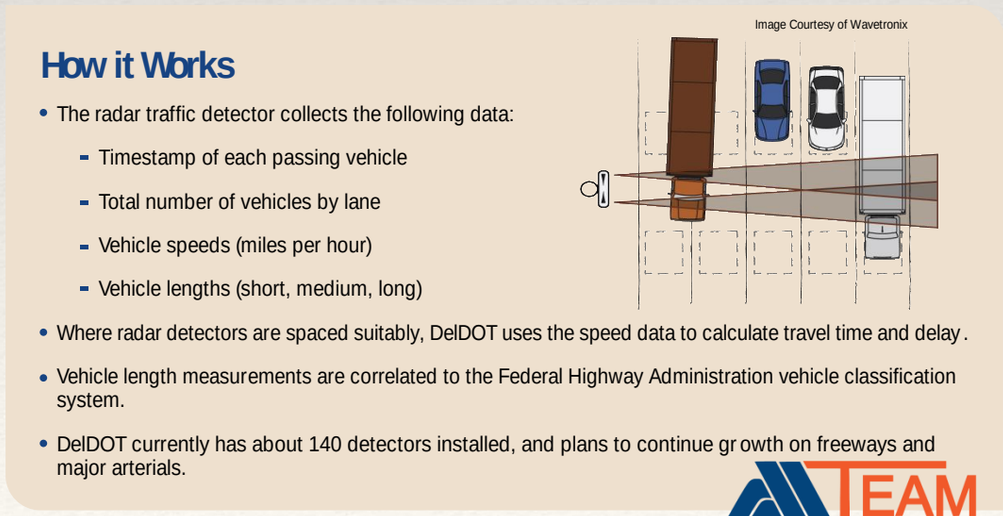
	5:00 AM	5:15 AM	5:30 AM	5:45 AM	6:00 AM	6:15 AM	6:30 AM	6:45 AM	7:00 AM	7:15 AM	7:30 AM	7:45 AM	8:00 AM	8:15 AM	8:30 AM	8:45 AM	9:00 AM	9:15 AM	9:30 AM	9:45 AM	10:00 AM
RT1 AT CHRISTIANA MALL	53.6	54.1	53.3	54.1	54.3	53.4	52.6	52.6	52.2	51.5	46.5	46.7	51.4	49.8	50.6	51.1	51.7	51.6	52.0	52.1	52.2
SR1 @ SR 273	64.9	65.2	65.0	65.8	65.2	64.2	59.8	56.3	60.1	54.3	50.5	46.6	56.2	58.4	55.4	57.8	61.7	61.8	61.0	61.3	61.5
DE1 AT CHRISTIANA MEADOWS	65.7	65.4	65.5	66.5	65.8	64.4	59.9	56.4	60.5	49.5	42.7	33.1	49.1	56.7	54.0	58.1	60.0	60.6	60.0	61.0	60.8
DE1 NORTH OF US40	63.4	62.6	64.6	64.2	64.6	62.3	56.5	55.4	56.9	47.5	26.9	33.2	18.0	31.9	46.3	60.4	59.6	60.9	60.3	62.2	61.3
DE 1 AT BEAR RD	67.4	67.0	67.8	68.1	67.4	66.5	63.3	63.1	64.0	58.0	42.2	40.4	47.3	51.0	58.8	64.6	64.4	65.6	64.8	66.7	65.8
DE 1 AT SPRINGFIELDS BLVD	65.7	64.7	65.4	65.7	64.6	63.4	59.8	59.2	61.0	55.7	40.9	38.0	46.1	47.9	58.3	61.2	62.0	63.7	62.7	64.3	63.7
DE 1 AT DE1-US13 SPLIT EXIT 156.N	67.1	67.3	67.5	68.0	66.5	65.3	61.1	56.5	60.5	54.2	50.1	55.7	61.5	61.1	62.4	61.6	64.4	65.5	64.0	65.4	65.4

Approximate Color Scale: in mph

0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75

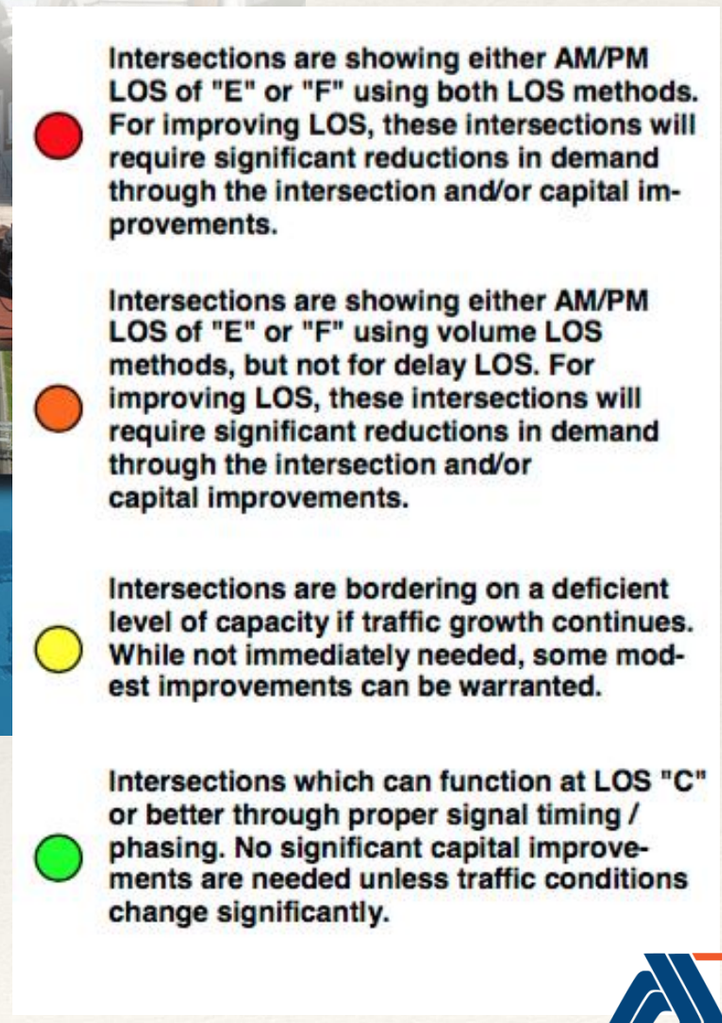
Case Studies: Transportation Solutions

- **Enhancing Design**
  - Consideration of Operations Data for Traffic Book
    - AADT
    - Truck percentages
- Plenty of data to identify design hours
- Project Prioritization



Case Studies: Planning

- **Planning projects:** TOMP
  - Small
  - Medium
  - Large
  - Based on traffic congestion
  - Based on reliable data



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Where are we going?

- Adding more data to the Extranet
- Using data to understand causes, severity and frequency of recurring and non-recurring congestion
- Predicting issues before they occur
- Identifying affordable quick wins
- Enhancing project prioritization

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